IN THE CLAIMS:

1. (original) A high power high repetition rate gas discharge laser UV light source comprising:

a gas discharge chamber comprising an interior wall comprising a vertical wall and an adjacent bottom wall;

a gas circulation fan creating a gas flow path adjacent the interior vertical wall and the adjacent bottom wall;

an in-chamber dust trap positioned a region of low gas flow.

2. (previously presented) The apparatus of claim 1 further comprising:

the dust trap is positioned along an interior wall.

3. (original) The apparatus of claim 1 further comprising:

the dust trap comprises at least one meshed screen.

4. (original) The apparatus of claim 2 further comprising:

the dust trap comprises at least one meshed screen.

5. (original) The apparatus of claim 1 further comprising:

the dust trap comprises a plurality of meshed screens.

6. (original) The apparatus of claim 2 further comprising:

the dust trap comprises a plurality of meshed screens.

7. (original) The apparatus of claim 3 further comprising:

the dust trap comprises a plurality of meshed screens.

8. (original) The apparatus of claim 4 further comprising:

the dust trap comprises a plurality of meshed screens.

9. (original) The apparatus of claim 1 further comprising:

the dust trap comprises at least two different gauge meshed screens.

10. (original) The apparatus of claim 2 further comprising:

the dust trap comprises at least two different gauge meshed screens.

11. (original) The apparatus of claim 3 further comprising:

the dust trap comprises at least two different gauge meshed screens.

12. (original) The apparatus of claim 4 further comprising:

the dust trap comprises at least two different gauge meshed screens.

13. (original) The apparatus of claim 5 further comprising:

the dust trap comprises at least two different gauge meshed screens.

14. (original) The apparatus of claim 6 further comprising:

the dust trap comprises at least two different gauge meshed screens.

15. (original) The apparatus of claim 7 further comprising:

the dust trap comprises at least two different gauge meshed screens.

16. (original) The apparatus of claim 8 further comprising:

the dust trap comprises at least two different gauge meshed screens.

17. (original) The apparatus of claim 1 further comprising:

the dust trap extends along the bottom interior wall of the chamber.

18. (original) The apparatus of claim 2 further comprising:

the dust trap extends along the bottom interior wall of the chamber.

19. (original) The apparatus of claim 3 further comprising:

the dust trap extends along the bottom interior wall of the chamber.

20. (original) The apparatus of claim 4 further comprising:
the dust trap extends along the bottom interior wall of the chamber.

21. (original) The apparatus of claim 5 further comprising:
the dust trap extends along the bottom interior wall of the chamber.

22. (original) The apparatus of claim 6 further comprising:
the dust trap extends along the bottom interior wall of the chamber.

23. (original) The apparatus of claim 7 further comprising:
the dust trap extends along the bottom interior wall of the chamber.

24. (original) The apparatus of claim 8 further comprising:
the dust trap extends along the bottom interior wall of the chamber.

25. (original) The apparatus of claim 9 further comprising:
the dust trap extends along the bottom interior wall of the chamber.

26. (original) The apparatus of claim 10 further comprising:
the dust trap extends along the bottom interior wall of the chamber.

27. (original) The apparatus of claim 11 further comprising:
the dust trap extends along the bottom interior wall of the chamber.

28. (original) The apparatus of claim 12 further comprising:
the dust trap extends along the bottom interior wall of the chamber.

29. (original) The apparatus of claim 13 further comprising:
the dust trap extends along the bottom interior wall of the chamber.

30. (original) The apparatus of claim 14 further comprising:
the dust trap extends along the bottom interior wall of the chamber.

31. (original) The apparatus of claim 15 further comprising:
the dust trap extends along the bottom interior wall of the chamber.

32. (original) The apparatus of claim 16 further comprising:
the dust trap extends along the bottom interior wall of the chamber.

33. (original) The apparatus of claim 17 further comprising:
the dust trap extends along a vertical portion of the interior wall.

34. (original) The apparatus of claim 18 further comprising:
the dust trap extends along a vertical portion of the interior wall.

35. (original) The apparatus of claim 19 further comprising:
the dust trap extends along a vertical portion of the interior wall.

36. (original) The apparatus of claim 20 further comprising:
the dust trap extends along a vertical portion of the interior wall.

37. (original) The apparatus of claim 21 further comprising:
the dust trap extends along a vertical portion of the interior wall.

38. (original) The apparatus of claim 22 further comprising:
the dust trap extends along a vertical portion of the interior wall.

39. (original) The apparatus of claim 23 further comprising:
the dust trap extends along a vertical portion of the interior wall.

40. (original) The apparatus of claim 24 further comprising:
the dust trap extends along a vertical portion of the interior wall.

41. (original) The apparatus of claim 25 further comprising:
the dust trap extends along a vertical portion of the interior wall.

42. (original) The apparatus of claim 26 further comprising:
the dust trap extends along a vertical portion of the interior wall.

43. (original) The apparatus of claim 27 further comprising:
the dust trap extends along a vertical portion of the interior wall.

44. (original) The apparatus of claim 28 further comprising:
the dust trap extends along a vertical portion of the interior wall.

45. (original) The apparatus of claim 29 further comprising:
the dust trap extends along a vertical portion of the interior wall.

46. (previously presented) The apparatus of claim 30 further comprising:
the dust trap extends along a vertical portion of the interior wall.

47. (previously presented) The apparatus of claim 31 further comprising:
the dust trap extends along a vertical portion of the interior wall.

48. (previously presented) The apparatus of claim 32 further comprising:
the dust trap extends along a vertical portion of the interior wall.

49. (previously presented) The apparatus of claim 1 further comprising:
the dust trap comprises:
a first meshed screen having a first gauge;
a second meshed screen having a second gauge smaller than the first gauge;

the second meshed screen intermediate the first meshed screen and the interior wall.

50. (previously presented) The apparatus of claim 2 further comprising:

the dust trap comprises:

a first meshed screen having a first gauge;

a second meshed screen having a second gauge smaller than the first gauge;

the second meshed screen intermediate the first meshed screen and the interior wall.

51. (previously presented) The apparatus of claim 3 further comprising:

the dust trap comprises:

a first meshed screen having a first gauge;

a second meshed screen having a second gauge smaller than the first gauge;

the second meshed screen intermediate the first meshed screen and the interior wall.

52. (previously presented) The apparatus of claim 4 further comprising:

the dust trap comprises:

a first meshed screen having a first gauge;

a second meshed screen having a second gauge smaller than the first gauge;

the second meshed screen intermediate the first meshed screen and the interior wall.

53. (previously presented) The apparatus of claim 5 further comprising:

the dust trap comprises:

a first meshed screen having a first gauge;

a second meshed screen having a second gauge smaller than the first gauge;

the second meshed screen intermediate the first meshed screen and the interior wall.

54. (previously presented) The apparatus of claim 6 further comprising:

the dust trap comprises:

a first meshed screen having a first gauge;

a second meshed screen having a second gauge smaller than the first gauge;

the second meshed screen intermediate the first meshed screen and the interior wall.

55. (previously presented) The apparatus of claim 7 further comprising:

the dust trap comprises:

a first meshed screen having a first gauge;

a second meshed screen having a second gauge smaller than the first gauge;

the second meshed screen intermediate the first meshed screen and the interior wall.

56. (previously presented) The apparatus of claim 8 further comprising:

the dust trap comprises:

a first meshed screen having a first gauge;

a second meshed screen having a second gauge smaller than the first gauge;

the second meshed screen intermediate the first meshed screen and the interior wall.

57. (previously presented) The apparatus of claim 9 further comprising:

the dust trap comprises:

a first meshed screen having a first gauge;

a second meshed screen having a second gauge smaller than the first gauge;

the second meshed screen intermediate the first meshed screen and the interior wall.

58. (previously presented) The apparatus of claim 10 further comprising:

the dust trap comprises:

a first meshed screen having a first gauge;

a second meshed screen having a second gauge smaller than the first gauge;

the second meshed screen intermediate the first meshed screen and the interior wall.

59. (previously presented) The apparatus of claim 11 further comprising:

the dust trap comprises:

a first meshed screen having a first gauge;

a second meshed screen having a second gauge smaller than the first gauge;

the second meshed screen intermediate the first meshed screen and the interior wall.

60. (previously presented) The apparatus of claim 12 further comprising:

the dust trap comprises:

a first meshed screen having a first gauge;

a second meshed screen having a second gauge smaller than the first gauge;

the second meshed screen intermediate the first meshed screen and the interior wall.

61. (previously presented) The apparatus of claim 13 further comprising:

the dust trap comprises:

a first meshed screen having a first gauge;

a second meshed screen having a second gauge smaller than the first gauge;

the second meshed screen intermediate the first meshed screen and the interior wall.

62. (previously presented) The apparatus of claim 14 further comprising:

the dust trap comprises:

a first meshed screen having a first gauge;

a second meshed screen having a second gauge smaller than the first gauge;

the second meshed screen intermediate the first meshed screen and the interior wall.

63. (previously presented) The apparatus of claim 15 further comprising:

the dust trap comprises:

a first meshed screen having a first gauge;

a second meshed screen having a second gauge smaller than the first gauge;

the second meshed screen intermediate the first meshed screen and the interior wall.

64. (previously presented) The apparatus of claim 16 further comprising:

the dust trap comprises:

a first meshed screen having a first gauge;

a second meshed screen having a second gauge smaller than the first gauge;

the second meshed screen intermediate the first meshed screen and the interior wall.

65. (previously presented) The apparatus of claim 1 further comprising

the dust trap comprises:

a plurality of dust collecting recesses in at least one of the vertical interior wall and the bottom wall of the chamber.

66. (previously presented) The apparatus of claim 65 further comprising:

a plurality of dust collecting recesses in the vertical interior wall and the bottom wall.

67. (previously presented) The apparatus of claim 65 further comprising:

the recesses are selected from a group comprising a one-part recess and a multi-part recess.

68. (previously presented) The apparatus of claim 66 further comprising:

the recesses are selected from a group comprising a one-part recess and a multi-part recess.

69. (previously presented) The apparatus of claim 67 further comprising:

the multi-part recess comprises two sections angled with respect to each other.

70. (previously presented) The apparatus of claim 68 further comprising:

the multi-part recess comprises two sections angled with respect to each other.

71. (previously presented) The apparatus of claim 1 further comprising:

the dust trap comprises:

a pressure trap positioned between a portion of a main insulator and an interior wall of the chamber.

72. (previously presented) A high power high repetition rate gas discharge laser UV light source comprising:

a gas discharge chamber;

a gas circulating fan comprising a cross-flow fan;

a fan cutoff comprising:

a vortex control pocket.

73. (previously presented) The apparatus of claim 72 further comprising:

the vortex control pocket is positioned and shaped to shift the vortex on the output of the crossflow fan so as to allow greater pressure across the fan for a given volume of flow through the fan.

74. (previously presented) A high power high repetition rate gas discharge laser UV light source comprising:

a preionization mechanism comprising a preionization tube containing a ground rod within an elongated opening in the preionization tube;

the ground rod comprising a rod made of a conductive material and having a positioning plug at each end of the ground rod; and,

a compliant member absorbing longitudinal thermal expansion of the ground rod without significant transverse movement in the remainder of the ground rod.

75. (previously presented) The apparatus of claim 74 further comprising:

the compliant member comprises:

a plurality of interleaving slits cut into the ground rod along a longitudinal axis of the ground rod.

76. (previously presented) The apparatus of claim 74 further comprising:

the compliant member comprises:

at least one reverse bend element.

77. (previously presented) A high power high repetition rate gas discharge laser UV light source operating in a burst mode comprising:

a preionization mechanism;

an automatic preionization shut-off mechanism that reduce preionization essentially to zero at a preselected time during a burst of pulses prior to the last pulse in the burst of pulses.

78. (previously presented) The apparatus of claim 77 further comprising:

the automatic preionization shut-off mechanism comprises a charge accumulation device timed to accumulate sufficient charge to cease preionization at a selected time.

79. (previously presented) The apparatus of claim 77 further comprising:

the automatic preionization shut-off mechanism comprises an RC network connected between a high voltage connected to the preionization mechanism and a common voltage.

80. (previously presented) The apparatus of claim 78 further comprising:

the automatic preionization shut-off mechanism comprises an RC network connected between a high voltage connected to the preionization mechanism and a common voltage.

81. (previously presented) The apparatus of claim 77 further comprising:

the automatic preionization shut-off mechanism is timed to essentially to zero after the first few pulses in a burst.

82. (previously presented) The apparatus of claim 78 further comprising:

the automatic preionization shut-off mechanism is timed to essentially to zero after the first few pulses in a burst.

83. (previously presented) The apparatus of claim 79 further comprising:

the automatic preionization shut-off mechanism is timed to essentially to zero after the first few pulses in a burst.

84. (previously presented) The apparatus of claim 80 further comprising:

the automatic preionization shut-off mechanism is timed to essentially to zero after the first few pulses in a burst.

85. (previously presented) A high power high repetition rate gas discharge laser UV light source including a pair of gas discharge electrodes in a gas discharge chamber comprising:

a preionization mechanism comprising:

a ground rod;

a switch mechanism connecting the ground rod to ground at a selected time prior to a discharge between the pair of gas discharge electrodes.

86. (previously presented) The apparatus of claim 85 further comprising:

the switch mechanism comprises a saturable magnetic switch connected to a high voltage supply to the pair of electrodes.

87. (previously presented) The apparatus of claim 85 further comprising:

the switch mechanism comprises a non-active inductive element connected to the ground rod.

88. (previously presented) A high power high repetition rate gas discharge laser UV light source including a pair of gas discharge electrodes in a gas discharge chamber defining a gas discharge region having a longitudinal centerline axis and a horizontal cross-sectional axis comprising:

a preionization mechanism;

a focusing element focusing the preionization radiation to a selected portion of the discharge in relation to the longitudinal centerline axis and the cross-sectional axis.

89. (previously presented) The apparatus of claim 88 further comprising:

the focusing element comprising a section of an elliptical cylinder having a cylindrical axis generally aligned to the longitudinal centerline axis of the electrodes and a first focus generally aligned with a centerline axis of the preionization mechanism and a second focus at the selected portion of the discharge.

90. (previously presented) The apparatus of claim 88 further comprising:

a main insulator formed to contain the focusing element.

91. (previously presented) The apparatus of claim 89 further comprising:

a main insulator formed to contain the focusing element.

92. (previously presented) The apparatus of claim 90 further comprising:

the main insulator comprising a polished surface forming the focusing element.

93. (previously presented) The apparatus of claim 91 further comprising:

the main insulator comprising a polished surface forming the focusing element.

94. (previously presented) A method of providing debris removal from a high power high repetition rate gas discharge laser UV light source comprising:

providing a gas discharge chamber comprising an interior wall comprising a vertical wall and an adjacent bottom wall;

creating with a gas circulation fan a gas flow path adjacent the interior vertical wall and the adjacent bottom wall;

providing an in-chamber dust trap positioned a region of low gas flow.

95. (previously presented) The method of claim 94 further comprising:

providing the in-chamber dust trap along the interior wall.

96. (previously presented) A method of providing acoustic resonance mitigation in a high power high repetition rate gas discharge laser UV light source comprising a gas discharge chamber including an elongated gas discharge region defining a longitudinal discharge axis, comprising the steps of:

providing an elongated baffle plate having an irregularly shaped acoustic wave dispersive facing and attaching this baffle plate to a portion of the chamber generally parallel to the longitudinal gas discharge region and positioned at a distance from the longitudinal gas discharge region based upon the frequency of a resonance peak that is desired to be reduced.

97. (previously presented) A method of providing acoustic resonance mitigation in a high power high repetition rate gas discharge laser UV light source comprising a gas discharge chamber including an elongated gas discharge region defining a longitudinal discharge axis, comprising the steps of:

randomizing the gas discharge pulse repetition rate over time while maintaining an average gas discharge pulse repetition rate over time.

98. (previously presented) A method of providing acoustic resonance mitigation in a high power high repetition rate gas discharge laser UV light source comprising a gas discharge

chamber including an elongated gas discharge region defining a longitudinal discharge axis, comprising the steps of:

randomizing the gas discharge pulse repetition rate over time within a burst o pulses, while maintaining an average gas discharge pulse repetition rate over time.

99. (previously presented) A high power high repetition rate gas discharge laser UV light source comprising:

an elongated baffle plate having a longitudinal axis comprising:

a base plate;

a plurality of pyramidal structures including varying numbers of generally pyramidal elements and oriented in groups of varying numbers of generally pyramidal elements and oriented along and transverse to the longitudinal axis.

100. (previously presented) A method of producing gas discharge laser output light pulses comprising:

reducing acoustic resonance by introducing artificial jitter into the timing of laser discharges to vary the inter-pulse period of the laser output light pulses from pulse to pulse within a burst of pulses randomly or in a repeatable pattern within a burst.

101. (previously presented) The method of claim 100 further comprising:

the variation is on the order of 1/width of a resonance peak.

102. (previously presented) A gas discharge laser output light pulse producing system comprising:

a set of paired elongated electrodes defining an elongated discharge region;

a preionization tube upstream of the gas discharge region;

a preionization mask covering the preionization tube to substantially prevent preionization upstream of the discharge region.